UNITED STATES PATENT AND TRADEMARK OFFICE

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10/594,725	09/29/2006	Hiroshi Wakimoto	107156-00352	9404

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ARENT FOX LLP
1050 CONNECTICUT AVENUE, N.W.
SUITE 400
WASHINGTON, DC 20036

EXAMINER
ELBIN, JESSE A

ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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	Application No.	Applicant(s)
Office Action Summary	10/594,725	WAKIMOTO, HIROSHI
	Examiner	Art Unit
	JESSE A. ELBIN	2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>29 September 2006</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>16-29</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>16-29</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>29 September 2006</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>9-29-06</u>.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Drawings

2.   The drawings are objected to because: Fig. 1(a) 'Dcnt' should be 'Scnt" per p. 8

line 13; and Fig. 2 '11' is described as "Display 4" on p. 12, line 22; .

3.   Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in

reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next

Office action. The objection to the drawings will not be held in abeyance.

Specification

4.   Applicant is reminded of the proper language and format for an abstract of the

disclosure.

The abstract should be in narrative form and generally limited to a single

paragraph on a separate sheet within the range of 50 to 150 words. It is important that

the abstract not exceed 150 words in length since the space provided for the abstract

on the computer tape used by the printer is limited. The form and legal phraseology

often used in patent claims, such as "means" and "said," should be avoided. The

abstract should describe the disclosure sufficiently to assist readers in deciding whether

there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information

given in the title. It should avoid using phrases which can be implied, such as, "The

disclosure concerns," "The disclosure defined by this invention," "The disclosure

describes," etc.

5.   The disclosure is objected to because of the following informalities: references to

"a fading" appear to refer to "a fading channel" (p. 2 lines 5, 15, and 20); references to

claims, which have been cancelled, should be removed (p. 3 line 20, p. 4 lines 3, 15, p.

5 lines 1-2); references to "lead solomon…" appear to refer to "Reed-Solomon…" (p. 7

line 19, p. 12 line 7); reference to "display 4" should be "display 11" (p. 12, line 22; see

drawing objections above).

Appropriate correction is required.

6.   Applicant's cooperation is requested in correcting any errors of which applicant

may become aware in the specification.

Claim Objections

7.   Claim 20 is objected to because of the following informalities: claim 20 states

that 'when a changing amount of the AGC voltage is larger than a predetermined

value...there is **not** an influence from a multi-pass"; however [0081] states that "at step

STA7 that a changing amount $\Delta Vagc$ is larger than a predetermined value Kagc...a

current reception state **has already been influenced** by a multi-pass fading or the like".

For the purposes of the art rejection below, "there is not an influence from a multi-pass"

will be interpreted as "there is an influence from a multi-pass fading". Appropriate

correction is required.

Claim Rejections - 35 USC § 101

8.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

9.   Claim 28 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claim 28 is drawn to "A computer program for

a computer to execute". "A computer program" is non-statutory subject matter, as it

does not fall in to one of the statutory categories of invention described in 35 USC §

101.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

10.   Claims 25 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by

Chien et al. (US PGPub 2004/0205438 ('438)).

Regarding claim 25, Chien teaches an audio signal processing apparatus (e.g.

Fig. 3 #228) for processing an audio signal outputted from receiving means (e.g. Fig. 3

#218) which is provided for receiving a signal transmitted hereto through a digital

transmission route (*from* Fig. 2 #202), said apparatus comprising: audio processing

means for processing said audio signal (e.g. "Because the audio input is digital,

appropriate buffering and processing known in the art may be applied in the audio

Interface block 236"; '[0049] lines 15-17); and control means (e.g. Fig. 15 #1506) for

judging a reception state using a plurality of information indicating an internal state of

said receiving means (Fig. 15 #1512, 1514), and controlling signal processing contents

to be executed by the audio processing means ("interpolation block 1500 may include

multiple interpolators 1502...with a MUX 1504 to select between the interpolator

outputs"; '438 [0108] lines 4-5, 6-7) in accordance with a result of said judging ("The

selection decision is made by the logic block 1506"; '438 [0108] lines 7-8), wherein said

control means (e.g. logic; Fig. 15 #1506) controls the signal processing contents (*via*

MUX; Fig. 15 #1504) in response to said reception state (*as determined by* Fig. 15

#1512, 1514) and a change of an amount of an audio signal outputted from said

receiving means (*as judged by* Fig. 17 'S1702').

   Regarding claim 27, Chien teaches an audio signal processing method (*as*

outlined by the system of e.g. Fig. 3 #228) for processing an audio signal outputted from

receiving means (e.g. Fig. 3 #218) which is provided for receiving a signal transmitted

hereto through a digital transmission route (*from* Fig. 2 #202), said method comprising:

an audio processing step for processing said audio signal (e.g. "Because the audio

input is digital, appropriate buffering and processing known in the art may be applied in

the audio Interface block 236"; '[0049] lines 15-17); and a control step (e.g. Fig. 15

#1506) for judging a reception state using a plurality of information indicating an internal

state of said receiving means (Fig. 15 #1512, 1514), and controlling signal processing

contents of the audio processing step ("interpolation block 1500 may include multiple

interpolators 1502...with a MUX 1504 to select between the interpolator outputs"; '438

[0108] lines 4-5, 6-7) in accordance with a result of said judging ("The selection decision

is made by the logic block 1506"; '438 [0108] lines 7-8), wherein said control step (e.g.

logic; Fig. 15 #1506) controls the signal processing contents (*via* MUX; Fig. 15 #1504)

in response to said reception state (*as determined by* Fig. 15 #1512, 1514) and a

change of an amount of an audio signal outputted from said receiving means (*as judged*

by Fig. 17 'S1702').

Claim Rejections - 35 USC § 103

11.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

12.   Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Chien et al. (US PGPub 2004/0205438 ('438)) in view of Shigihara et al. (US Patent

5,966,186 ('186)).

        Regarding claim 16, Chien teaches an audio signal processing apparatus (e.g.

Fig. 3 #228) for processing an audio signal outputted from receiving means (e.g. Fig. 3

#218) which is provided for receiving a signal transmitted hereto through a digital

transmission route (*from* Fig. 2 #202), said apparatus comprising: audio processing

means for processing said audio signal (e.g. "Because the audio input is digital,

appropriate buffering and processing known in the art may be applied in the audio

Interface block 236"; '[0049] lines 15-17); and control means (e.g. Fig. 15 #1506) for

judging a reception state using a bit error rate ("the error rate could be bit error rate";

'438 [0110] line 2), and controlling signal processing contents to be executed by the

audio processing means ("interpolation block 1500 may include multiple interpolators

1502…with a MUX 1504 to select between the interpolator outputs"; '438 [0108] lines 4-

5, 6-7) in accordance with a result of said judging ("The selection decision is made by

the logic block 1506"; '438 [0108] lines 7-8).

Chien does not explicitly teach using an AGC voltage to judge reception state, nor wherein when judging from said bit error rate that a reception state is not acceptable, the control means judges from a value of said AGC voltage whether a reception electric field is a weak electric field so as to judge the reception state.

In the same field of endeavor, Shigihara teaches using an AGC voltage to judge reception state ('186 Fig. 16 'S71'), and wherein when judging from said bit error rate that a reception state is not acceptable (i.e. Fig. 17 "Domain C"), the control means judges from a value of said AGC voltage whether a reception electric field is a weak electric field so as to judge the reception state (Fig. 16 'S73') for the benefit of making a more reliable determination of signal strength.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the signal quality assessment and control apparatus taught by Chien with the combination of AGC and error rate assessments as taught by Shigihara for the benefit of making a more reliable determination of signal strength.

Regarding claim 17, the combination of Chien and Shigihara remains as applied above.

Chien further teaches the audio processing means individually performing a signal processing on said audio signal in each channel ("each audio data block consists of two channels, Audio Data (Right) and Audio Data (Left)"; '438 [0086] lines 12-14).

Regarding claim 18, the combination of Chien and Shigihara remains as applied above.

Shigihara further teaches that when the control means has judged from a value of said AGC voltage that a reception electric field is not a weak electric field (e.g. Fig. 17 domain 'A'), said control means judges a reception state from a changing amount of said AGC voltage ("within the domains A and C…signal quality is calculated and indicated based on the AGC voltage for the change of the input field strength"; '186 col. 14 lines 3-6).

Regarding claim 19, the combination of Chien and Shigihara remains as applied above.

Examiner takes official notice that monitoring the change in AGC voltage to determine that "a reception field has been stabilized" is well known in the art. AGC systems are commonly adjusted using different rates, to allow the AGC to quickly compensate for large changes in gain, as well as fine tune the gain, when the "field has been stabilized". Monitoring of the AGC voltage must be monitored in order for the system to switch from a coarse adjustment to fine-tuned adjustments.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the signal quality assessment and control apparatus taught by the combination of Chien and Shigihara to monitor the change in AGC voltage, allowing the signal processing to switch between a coarse and fine-tune adjustment value, as is common in the art.

13.   Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Chien et al. (US PGPub 2004/0205438 ('438)) in view of Shigihara et al. (US Patent

5,966,186 ('186)), as applied to claim 18 above, and further in view of Henriksson (US

Patent 5,128,965 ('965)).

Regarding claim 20, the combination of Chien and Shigihara remains as applied

above.

Neither Chien nor Shigihara explicitly teach wherein when a changing amount of

the AGC voltage is larger than a predetermined value, the control means judges that

there is [[not]] (see claim objection above) an influence from a multi-pass.

In the same field of endeavor, Henriksson teaches wherein when a changing

amount of the AGC voltage ("change of the received signal level"; '965 col. 2 lines 3-4)

is larger than a predetermined value ("fading may be very rapid (as rapid as 100dB/s

and more"; '965 col. 2 lines 6-7), the control means judges that there is an influence

from a multi-pass ("rapid fades occurring in multi-path propagation can be detected

efficiently"; '965 col. 2 lines 4-5) for the benefit of compensating for specific signal

degradation causes.

It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the signal quality assessment and control apparatus taught by the

combination of Chien and Shigihara with the signal-change rate detector taught by

Henriksson for the benefit of compensating for specific signal degradation causes.

Chien further teaches the control means controls said signal processing contents in response to a result of said judging (see rejection of claim 16 above).

Regarding claim 21, the combination of Chien, Shigihara, and Henriksson remains as applied above.

Shigihara further teaches wherein when the control means has judged from a value of said AGC voltage (e.g. Fig. 16 'S71) that a reception electric field is a weak electric field (Fig. 17 domain 'C'), said control means judges a reception state from a changing amount of C/N value of the receiving means ("the converting means converts the error rate into the C/N ratio of the received signal in the digital broadcast receiving device"; '186 col. 2 lines 26-28), since the carrier-to-noise ratio is an important factor, as "high input field strength does not mean an adequate receiving signal quality" ('186 col. 1 lines 37-38).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the signal quality measurement/control device taught by the combination of Chien and Shigihara to use the C/N ratio in determining signal strength, since the carrier-to-noise ratio is an important factor, as high input field strength does not mean an adequate receiving signal quality.

Regarding claim 22, the combination of Chien, Shigihara, and Henriksson remains as applied above.

Shigihara further suggests that wherein when a changing amount of C/N value is smaller than a predetermined value ("the converting means converts the error rate into the C/N ratio of the received signal in the digital broadcast receiving device"; '186 col. 2 lines 26-28), the control means judges that a reception electric field is a weak electric field (e.g. Fig. 17 domain 'A'). Further, see rejection of claim 16 above, wherein Chien teaches the control means controlling the signal processing contents in response to a result of said judging.

Regarding claim 23, the combination of Chien, Shigihara, and Henriksson remains as applied above.

See rejection of claim 20 above, wherein Henriksson teaches determining "an influence form a multi-pass" based on received signal level. Further, Shigihara suggests use of the C/N value in place of (or addition to) the AGC value to determine signal quality, as the C/N value is an important factor for determining "adequate receiving signal quality" (see rejection of claim 21 above).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the signal quality measurement/control device taught by the combination of Chien, Shigihara, and Henriksson by using the C/N value to determine signal quality as suggested by Shigihara for the benefit of providing a more accurate measurement of signal quality.

Regarding claim 24, the combination of Chien, Shigihara, and Henriksson

remains as applied above.

See rejection of claim 23 above.

14.   Claims 26 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Chien et al. (US PGPub 2004/0205438 ('438)).

Regarding claim 26, Chien remains as applied to claim 25 above.

Chien further teaches wherein information in relation to a change of said audio

signal ("Contiguous Audio Block Errors"; Fig. 17 'S1702') includes an aggravation period

("Errors > $Mute_{th}$; Fig. 17 'S1702') in which an audio signal amount is lower than a

threshold (*wherein if the number of errors in the audio signal rises above a threshold; it*

logically follows (and is structurally equivalent to) that the amount of 'acceptable' audio

signal has fallen below a given threshold) and an aggravation interval which is an

interval of the aggravation period (e.g. *when* "Contiguous Correct Audio Blocks > N_c";

Fig. 17 'S1706').

Regarding claim 28, Chien teaches a [method] for processing an audio signal

outputted from receiving means (e.g. Fig. 3 #218) provided for receiving a signal

transmitted hereto through a digital transmission route (*from* Fig. 2 #202), said program

comprising: an audio processing step for processing said audio signal (e.g. "Because

the audio input is digital, appropriate buffering and processing known in the art may be

applied in the audio Interface block 236"; '[0049] lines 15-17); and a control step (e.g.

Fig. 15 #1506) for judging a reception state using a plurality of information indicating an

internal state of said receiving means (Fig. 15 #1512, 1514), and controlling signal

processing contents of the audio processing step ("interpolation block 1500 may include

multiple interpolators 1502...with a MUX 1504 to select between the interpolator

outputs"; '438 [0108] lines 4-5, 6-7) in accordance with a result of said judging ("The

selection decision is made by the logic block 1506"; '438 [0108] lines 7-8), wherein said

control step (e.g. logic; Fig. 15 #1506) controls the signal processing contents (*via* MUX;

Fig. 15 #1504) in response to said reception state (*as determined by* Fig. 15 #1512,

1514) and a change of an amount of an audio signal outputted from said receiving

means (*as judged by* Fig. 17 'S1702').

While Chien does not explicitly teach computer program for a computer to

execute, which computer is provided [to perform the method], one of ordinary skill in the

art would recognize that a majority of signal processing performed, at the time of the

invention (especially for digital communication systems), is performed by "a computer".

It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the method taught by Chien, to perform the method via a computer,

as is common in the art.

Regarding claim 29, Chien teaches a [method] for processing an audio signal

outputted from receiving means (e.g. Fig. 3 #218) which is provided for receiving a

signal transmitted hereto through a digital transmission route (*from* Fig. 2 #202), said

method comprising: an audio processing step for processing said audio signal (e.g. "Because the audio input is digital, appropriate buffering and processing known in the art may be applied in the audio Interface block 236"; '[0049] lines 15-17); and a control step (e.g. Fig. 15 #1506) for judging a reception state using a plurality of information indicating an internal state of said receiving means (Fig. 15 #1512, 1514), and controlling signal processing contents of the audio processing step ("interpolation block 1500 may include multiple interpolators 1502…with a MUX 1504 to select between the interpolator outputs"; '438 [0108] lines 4-5, 6-7) in accordance with a result of said judging ("The selection decision is made by the logic block 1506"; '438 [0108] lines 7-8), wherein said control step (e.g. logic; Fig. 15 #1506) controls the signal processing contents (*via* MUX; Fig. 15 #1504) in response to said reception state (*as determined by* Fig. 15 #1512, 1514) and a change of an amount of an audio signal outputted from said receiving means (*as judged by* Fig. 17 'S1702').

While Chien does not explicitly teach a recording medium having recorded therein a computer program for a computer to execute, which computer is provided [to perform the method], one of ordinary skill in the art would recognize that a majority of signal processing performed, at the time of the invention (especially for digital communication systems), is performed by "a computer", inherently requiring "a recording medium" to store the recorded computer program.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Chien, to perform the method via a computer,

inherently requiring "a recording medium" to store the recorded computer program, as is

common in the art.

Conclusion

15.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

> a.   Yuzawa (US PGPub 2004/0073945) teaches a data reception device
>
> which monitors a C/N value to determine signal quality.
>
> b.   Hoshino (US PGPub 2003/0115588) teaches a broadcasting signal
>
> processing apparatus.
>
> c.   Kennedy et al. (US Patent 4,213,129) teaches a delay stabilizing system
>
> that uses coarse and fine tuning values for AGC adjustment.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to JESSE A. ELBIN whose telephone number is (571)270-

3710. The examiner can normally be reached on Monday through Friday, 9:00am to

6:00pm EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. A. E./
Examiner, Art Unit 2614

/CURTIS KUNTZ/

Supervisory Patent Examiner, Art Unit 2614